

SECTION 9 - APPENDIX



Iowa Sustainable Design Initiative



SECTION 9 - APPENDIX

Appendix A – Cost of LEED

Introduction

As noted in the “Economics of Sustainable Design” section, it does cost more to achieve a Leadership in Energy and Environmental Design (LEED) Certified Building. Importantly, there is no equation to determine how much more because the cost of LEED depends upon a number of things, such as building type, specific credits pursued, and team experience. This Appendix provides insight regarding the types of costs you might expect to incur to achieve a LEED Certified Building.

Additional Costs Time

Additional time may be necessary to complete a LEED project and may include the following.

Education

If members of the project team are inexperienced in sustainable design, a green building workshop or seminar, preferably prior to schematic design, would be useful. On all sustainable projects, a separate sustainable design charrette is typically held or is integrated into a standard architectural charrette.

Documentation

The LEED process requires careful documentation of various aspects of the design and construction process, the materials and methods employed, and the performance of the finished product. This includes photographs, narratives, plans, specifications, and calculations. For more information, visit the US Green Building Council's (USGBC) website at <http://www.usgbc.org/>. The entire team participates in the documentation process.

Coordination

Typically, a LEED facilitator or champion is designated. This individual (or individuals) will spend extra time coordinating the LEED effort.

Specifications

“Green specs” are new territory for much of the building industry. LEED requires modification to the project specifications. Refer to Chapter 8, Sustainable Construction Drawings, for more information.

Research

Especially the first few times a team designs a building to LEED standards, there likely will be a significant amount of research to locate

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new products and technologies. This information can be used on subsequent LEED projects.

Expenses

There are fees paid directly to the USGBC for all LEED projects. These fees include registering a project with the USGBC, as well as for having LEED documentation reviewed for certification. The table below shows the fee structure to register and certify a building at the time that this document was printed. This information was reprinted by permission of USGBC. Refer to <http://www.usgbc.org> to determine the current fee structure.

USGBC LEED Fee Structure

	Less than 75,000 sf	75,000-300,000 sf	More than 300,000 sf
Registration Charges	Fixed Rate	Based on sf	Fixed Rate
Members	\$750	\$0.01 per sf	\$3,000
Non-Members	\$950	\$0.0125 per sf	\$3,750
Certification Charges	Fixed Rate	Based on sf	Fixed Rate
Members	\$1,500	\$0.02 per sf	\$6,000
Non-Members	\$1,875	\$0.025 per sf	\$7,500

There may also be expenses incurred if technical questions need to be posed to the USGBC regarding credit interpretations. Once a project is registered with the USGBC, the project team can ask two questions related to credit compliance for an official ruling from the USGBC. The first two interpretations are free. Any additional credit interpretations cost \$220 per inquiry.

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Additional Consulting Services

Members of the design team or other consultants may provide many specialty services. Experts that are needed will depend on the credits being pursued on each particular project. Note that commissioning and energy modeling are required prerequisites for all LEED-NC projects.

Commissioning

Commissioning is required to meet Energy and Atmosphere Prerequisite 1.0. This Prerequisite mandates that before a building can become LEED Certified it must follow best practice commissioning procedures as follows:

- engage a commissioning team that does not include individuals directly responsible for project design or construction management;
- review the design intent and the basis of design documentation;
- incorporate commissioning requirements into the construction documents;
- develop and utilize a commissioning plan;
- verify installation, functional performance, training and operation, and maintenance documentation; and
- complete a commissioning report.

To help determine an average cost for commissioning, the USGBC provides these general guidelines as a starting point. Commissioning costs for each project will vary. This information is reprinted with permission of the USGBC and can be found in the LEED-2.1 Reference Guide on page 113.

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Estimated Cost of Independent Third-Party Commissioning Service

Construction Cost	Total Cost for Commissioning	Fundamental Activities	Additional Activities
< \$5 million	1.5% - 3.0%	1.2% - 2.5%	0.3% - 0.5%
< \$10 million	0.7% - 2.0%	0.5% – 1.7%	0.2% – 0.3%
< \$50 million	0.6% - 1.5%	0.5% – 1.3%	0.1% – 0.2%
> \$50 million	0.4% - 1.5%	0.4% – 1.3%	0.2%
Complex projects	Add 0.2% - 0.8%	0.2% – 0.7%	0.1%
Source: Cox, Dorgan and Dorgan. "The Value of Commissioning: Costs and Benefits." The Austin Papers: The Best of the 2002 USGBC International Green Building Conference. BuildingGreen, Inc., 2002			
Notes: These costs include moderate travel expenses. Complexity, timing (number of visits), and team cooperation greatly affect cost. Obtain hourly estimates by task to understand the Commissioning Authority's role and involvement. These costs are for acquiring the services of an independent third-party Commissioning Authority. If the owner utilizes internal resources with the proper training and skill sets, the cost is often reduced by 20 to 50 percent.			

Energy Modeling

LEED emphasizes the importance of conserving energy. In Energy and Atmosphere Prerequisite 1, it is required that all buildings meet the minimum requirements of ASHRAE 90.1 or the local energy code, whichever is more stringent. In some cases, this may be proven using a prescriptive method. If not, an energy model needs to be completed to show that this requirement is met. In addition, Energy and Atmosphere Credit 1 (Optimize Energy Performance) offers multiple points for designing a building that exceeds the requirements of ASHRAE 90.1-1999. This must also be proven using an approved energy modeling system. The cost will vary depending on the building size, and complexity of the HVAC requirements, as well as the number of systems and options modeled.

Appendix A – Cost of LEED

Additional Construction/Material Costs

There are many sustainable materials and solutions that do not add additional cost. Depending on the LEED credits pursued, however, additional costs may be incurred. This should be evaluated on each project.

Note that there is no magic number regarding how much it costs to do a LEED certified project. The final cost will depend on many factors, such as the level of LEED achieved, project location and scope, team experience, and owner commitment. The USGBC developed the different levels of certification purposely. The intent was that most buildings could achieve a LEED Certified rating. To achieve higher levels of certification, there will certainly be an increase in design time and construction cost. Also note that LEED may be used as a guideline for a project. Some building owners want to use LEED but do not intend to actually get a building LEED certified. This significantly reduces cost.

One good source of information that addresses the cost of LEED is a study published by the David and Lucile Packard Foundation. In 2001, the foundation developed plans for a new office building using LEED as a measure for sustainability goals. The design team was asked to develop a decision-making tool that would explain the aesthetic, economic, scheduling, and environmental impacts of the project. The project team developed a report and summary matrix. The *Sustainability Report and Matrix* developed six building scenarios, including the four LEED™ levels. The report and matrix can be downloaded from <http://www.packard.org/index.cgi?page=building>

Appendix B – Evaluating Sustainable Solutions

As noted in the “Economics of Sustainable Design” section, there are many ways to compare potential sustainable solutions. Following is a simple evaluation tool that might be used when considering an individual solution or comparing multiple solutions.

Solution	Design Impact	Schedule Impact	Cost Impact	Environmental / Health Benefits and Issues	Notes/ Decisions
1. List a specific solution (for example, specifying insulation that has been certified by GreenGuard for Indoor Air Quality).	<p>Note whether this solution will require additional design.</p> <p>Suggested: 0 = none √ = minimal √√ = moderate √√√ = significant design impact</p>	<p>Note if it is anticipated that this solution will impact the construction schedule.</p> <p>Suggested: 0 = no √ = minimal √√ = moderate √√√ = significant schedule impact</p>	<p>Identify if there is an anticipated impact to either first cost, or operational cost.</p> <p>Suggested: 0 = no \$ = low \$\$ = medium \$\$\$ = high cost impact</p>	<p>Identify any environmental or health benefits and issues.</p> <p>Suggested: E = environmental H = health</p>	
2. List another specific solution (if applicable)					
3. Etc.					

Appendix B – Evaluating Sustainable Solutions

Sample Use of Evaluation Form

Solution	Design Impact	Schedule Impact	Cost Impact	Environmental/ Health Benefits and Issues	Notes/ Decisions
Standard Product: Particleboard					Particleboard contains formaldehyde. Formaldehyde is a colorless, strong-smelling gas. When present in the air at levels above 0.1 ppm (parts in a million parts of air), it can cause watery eyes, burning sensations in the eyes, nose and throat, nausea, coughing, chest tightness, wheezing, skin rashes, and allergic reactions. It has also been observed to cause cancer in scientific studies using laboratory animals and may cause cancer in humans.

Appendix C – Writing the Green RFP

The following information is reprinted by permission of the **AIA's Committee on the Environment**. This information, as well as additional related resources, is available at <http://www.aia.org/cote/rfps>

Note that "Writing the Green RFP" is a work in progress.

WRITING THE GREEN RFP: Sustainable Design Language for Consultant Requests

CORE ELEMENTS OF REQUESTS

Project Introduction

The request should include a short introduction, which will state clearly and succinctly the scope of the project, the organization's vision for the project, including sustainable design benchmarks desired, and the nature of services needed. If the client is a partnership, the nature of that relationship should be stated.

It is also appropriate for the request to state the client's core mission, identify how sustainable design relates to that mission, and reference other relevant statements about the motive for pursuing a sustainable design project. The client should do internal goal setting prior to the writing of the request, and those goals can provide the framework for the project introduction.

Sample language:

... the Museum has defined its mission as "to inspire wonder, discovery and responsibility for our natural and cultural worlds." Our vision statement describes an active, outward looking institution: To fully realize our mission and vision, the Natural History Museum must reinvent itself within a structure that both inspires and enables its staff and visitors to become stewards of their natural and cultural worlds. I hope you will participate in this process as we define a team dedicated to creating a New Museum for a new century.

—RFQ: Natural History Museum of Los Angeles County,
Los Angeles, CA (2001)

* * *

Because the new SALA facility will not only accommodate learning but also serve as an enduring lesson in design and maintenance, it should embody the highest possible architectural and environmental design excellence. The project should be convivial, beautiful, and sustainable, humane and functional, and responsive to the identity of

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Penn State University and the cultural and natural forces in the region.

—RFP: SALA Building, Penn State University,
University Park, PA (2000)

Project Objectives

Environmental sensitivity or high performance characteristics should be part of the project objectives if the client places a high priority on those aspects of the project. If the client has technical expertise, it may be able to develop the objectives in detail. If not, broader objectives may be suggested here, with the assumption that articulating these specifically will be part of the early project work by the consultants.

Sample language of specific objectives (referencing design strategies):

While any type of environmentally sound innovative building technology may be proposed, the City is particularly interested in technologies that address the following:

- Ecological site design; on-site erosion control, water purification/pollution reduction, and storm water management (bioswales, eco-roofs, storm water filtration, etc.).
- Transportation: promoting bicycle, pedestrian, and transit use.
- Waste reduction: building reuse, job site recycling, and efficient use of materials.
- On-site management of sewage and organic wastes, such as gray water systems and biological wastewater treatment.
- Energy efficiency: efficient thermal envelopes, efficient space and water heating, lighting, controls and monitoring, and appliances.
- Renewable energy: photovoltaics, geothermal pumps, wind turbines, micro-turbines, and fuel cells.
- Water efficiency, both domestic and irrigation, including rainwater harvesting for irrigation and toilet flushing.
- Materials and resources:

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- Durable building envelopes and long-lived materials or assemblies
- Recycled-content materials
- FSC-certified woods
- Safer, less toxic materials, such as alternatives to CCA-treated wood
- Innovative application of natural materials (characterized by low embodied energy, local availability, good performance, biodegradable, safe, esthetic) such as straw, earth, and other composites.
- Indoor environmental quality, pollution reduction, worker and occupant safety, air cleaning, humidity control, and thermal comfort.
- Operations and maintenance:
 - Monitoring of energy, water, waste, air quality and transportation use
 - Resource-efficient building operations practices

— RFP: City of Portland Green Investment Fund, Grants for Affordable Housing, Portland, OR (2002)

Qualifications and Experience

A detailed explanation of the consultant personnel qualifications should be a part of the submittal, and this should include resumes, certification issues, and other relevant background.

Sample language requesting integrative, multi-disciplinary team:

The Poudre School District believes that an integrated design approach can greatly increase the chance of success of meeting sustainable design goals without getting indigestion. Traditional design approaches to the construction of facilities has largely been a linear process. The architect progresses from conceptual/schematic design to design development to construction documents to contract administration while pulling in technical consultants along the way. Integrated design employs a multi-disciplinary approach where all project stakeholders are

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involved in the design process from start to finish on a collaborative basis. The process recognizes that a design decision made unilaterally may have a major impact on achieving sustainable design goals.

—RFP: Poudre School District Prototype Elementary School,
Fort Collins, CO (2000)

Sample language for specific qualifications desired:

An important goal of the Authority is to develop an environmentally responsible building on the Site that can serve as a model for high-rise residential construction in this region and elsewhere. The Authority's policy is to implement financially feasible, technologically sound strategies to conserve energy and to surpass current norms for water conservation, waste management/ recycling and the quality of the indoor environment (including quality of indoor air, light, acoustics and personal controllability of building systems). The Authority will require that such strategies be fully explored in the development of the Site. Specifically, the Authority will require schematic designs for the building to be analyzed by an experienced consultant using energy use computer simulation model such as DOE-2. The results of this analysis will be used to determine whether alternative design choices could increase the energy efficiency of the building, and what the incremental cost/benefit of these alternatives would be over the life of the building. The DOE-2 analysis would be repeated during the design process at design development phase and upon preparation of construction drawings. The Authority is prepared to assist the Developer in applying for any available funding from the New York State Energy Research and Development Authority to help defray the cost of this analysis as well as the incremental cost of incorporating energy efficiency measures in the building design.

—RFP: Site 18A, Battery Park City Authority Residential
Development and Design,
New York, NY (2000)

Clients may invite respondents to include a list of environmental conferences, seminars, workshops, and professional meetings attended by team members in recent months or years, a list of firm members actively involved in the local, state, or national level of the American

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Institute of Architects' (AIA) Committee on the Environment (COTE) or similar efforts such as the U.S. Green Building Council.

Requests that get too specific with past examples, such as "provide three examples of medium-sized conference centers," open the door to specialist or very large firms only; "similar in scope and scale" is more appropriate wording.

Services Required and Approach

This section should articulate what the client wants the consultant to do. In most cases, it is recommended that clients ask respondents to describe their own approaches and processes, rather than ask them to follow the issuing client's process. Such descriptions can be useful when comparing consultants. Plus, respondents with expertise in sustainable design may suggest a sophisticated or tailored approach the client might not have considered.

Sample language of specialized services required:

Demonstrated ability to provide green building consulting and design services for public and commercial buildings. These services can be provided by the proposed by the proposed firm or individual, as well as through the use of specialized subcontractors. Firms and individuals responding to this RFQ will be required to submit information specifying in which of the following areas they can provide expert services:

- Recycled-content and sustainable building product selection, specification, and procurement
- Waste reduction strategies, such as construction & demolition waste management plans and specifications, deconstruction plans and specifications, storage and collection of recyclables, and other reuse opportunities.
- Use of the U.S. Green Building Council's LEED Green Building Rating System to guide project design.
- Design charrettes for projects using the US Green Building Council's LEED Green Building Rating System
- Development of Design Guidelines and Master Specifications for public agencies
- Partnering opportunities in building projects with organizations such as DOE and PG&E
- Use of creative financing for green buildings
- Green operating and maintenance plans

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- Commissioning a green building
- Energy modeling and analysis
- Monitoring and tracking of final projects once they are operational (tracking back to original models)

—RFQ: Green Building Assistance, Alameda County Waste Management Authority, San Leandro, CA (2002)

Scope of the Project

This section should outline the key phases of work, critical deliverables, and other tasks that will need to be completed as part of the project work. These could include:

- Project vision articulation
- Site and resource analysis
- Project programming
- Contract documents
- Schematic (or concept) design
- Design development
- Construction management
- Building commissioning and close-out

For more information, see *The Architect's Handbook of Professional Practice* (John Wiley & Sons, 2001). (Order at https://aia-timssnet.uapps.net/AIAProducts/timssnet/products/tnt_showprdsplash.cfm or use a copy in AIA offices around the country. To find the AIA office near you, visit www.aia.org/institute/chapters/chapter_search.asp.)

Budget

Inclusion of construction budget information, even if just a range, will result in responses far more valuable to the organization. Without any budget parameters, consultants will be forced to speculate (low and high), which can lead to a less-focused response.

Green buildings typically require some additional services and result in additional deliverables. In most cases, additional costs are paid for within

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a few years based on energy savings and other factors. Aggressive efforts may require longer-term payback analyses.

Submission Requirements

The request should include a list of the submittal components as well specific directions for submission and clear rules about deadlines. The submittal could include (but may not be limited to) some or all of the following:

- Cover letter
- Introduction to the firm and team
- Explanation of approach, philosophy
- Explanation of work to be performed
- Project schedule (based on some dates provided)
- Resumes of key personnel
- List of green design "tools" that the team would use (and why they are appropriate)
- Lists of subconsultants and their qualifications
- Statement of qualifications
- Compensation (broken down by phase) or fee structure
- Sample projects and other relevant experience
- References

Evaluation Methodology

The request should include the evaluation criteria that will be used to select the consultant as well as who will be doing that evaluating. If the client plans to weight certain criteria more heavily than others, that weighting system should be spelled out in detail for respondents.

LEED, the USGBC's green building rating system, is growing in use, but there are still only a sprinkling of LEED-certified buildings throughout the country. Requiring firms to show LEED certified buildings of the same type or scale as the project in question may result in a low number of responses. But there are other ways that LEED can be useful. Project team members may include LEED-accredited professionals (and the RFP could require this). The RFP could also ask that the team be familiar with the use of LEED as a tool to help guide the project. This approach, regardless of whether the project become LEED registered or eventually

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certified, can help ensure that some of the many issues involved with sustainable design are considered and addressed.

The client may also want to compare team based on what other tools they have experience with, such as DOE-2 software to create energy profiles, Green Building Advisor, Energy 10, Energy Plus, and more.

Contractual Information

See the *AIA Handbook* for guidelines on contractual information that should be included.

(Order at https://aia-timssnet.uapps.net/AIAProducts/timssnet/products/tnt_showprdsplash.cfm) or use a copy in AIA offices around the country.

To find the AIA office near you, visit www.aia.org/institute/chapters/chapter_search.asp

The client may choose to identify whether its team plans to use current AIA owner-architect agreements or its own contracts.

Appendix D – Sample Specifications

SECTION 06000

CARPENTRY

Green Use Discussion: Unrestricted forestry practices have had dire environmental consequences including the displacement of wildlife, loss of habitat, increased occurrence of tree diseases, invasion of non-native species, damage from erosion and pesticides and an increase in the rate of global warming since forests assist in maintaining a balance between the biomass of the world's vegetation and sequestering of carbon dioxide. Building construction accounts for over 25 percent of wood harvested annually. There are a number of strategies that architects can use to minimize the damage from over-forestation.

Certified Wood: [The Forest Stewardship Council \(FSC\)](#), is an international non-profit organization founded to support environmentally appropriate, socially beneficial and economically viable management of forests and plantations. The FSC identifies wood from well-managed forests and insists on a strict "Chain of Custody" protocol for tracking wood from forests all the way through the milling and manufacturing process. There is a wide variety of certified wood products for architects and designers who wish to promote sustainable forest practices through the purchase of certified wood products. Review the [Forest Certification Resource Center](#) database for FSC products.

Note! Wood doors are also available FSC certified. See Section 08211

Recycled Content: Forest resources can also be protected by the use of recycled content in wood products. The [Scientific Certification System](#), an independent third party organization, certifiers products based on specific attributes for use of recycled content. The [Certified Products List](#) identifies many wood-based products for both recycled content and forest management attributes.

Biobased Products: [Executive Order 13134](#), Developing and Promoting Biobased Products and Bioenergy established standards for commercial or industrial products that utilize renewable agricultural or forestry materials. A number of substitutes to conventional particleboard have been created as a result of E.O. 13134. Not only do these products utilize agricultural waste such as wheat straw but they also use substitutes to formaldehyde, a recognized human carcinogen, as the binder. These products are identified in the Sustainable Products Database under the Product Type "Biobased Composite Boards".

Arsenic free treated wood: The EPA has initiated a phase out of CCA (Chromium Copper Arsenate), treated wood for consumer use based on risks associated with arsenic in soil and on skin. Although this action still

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allows a significant number of uses for construction and agricultural applications this specification recognizes ACQ (Ammonium Copper Quat), as an acceptable substitute.

LEED Notes! Products in the section can be utilized as part of three LEED Credits. MR Credit 4, Recycled Content; MR Credit 7, Certified Wood and EQ Credit 4.4, Composite wood without urea-formaldehyde resins. If you are pursuing the Certified Wood Credit contact Sustainable Design for a copy of the Certified Wood Toolkit that will satisfy submittal reporting requirements for LEED.

PART 1 –

1.1 QUALITY ASSURANCE

- A. Lumber grading rules and species:
 - 1. US Department of Commerce, PS-20-70.
 - 2. Western Wood Products Association (WWPA).
 - 3. Southern Forest Products Association (SFPA).
 - 4. **Forest Stewardship Council (FSC).**
- B. Plywood grading rules and recommendations:
 - 1. For softwood plywood: US Department of Commerce PS-1-83.
 - 2. For hardwood plywood: US Department of Commerce PS-51-71.
 - 3. American Plywood Association (APA).
- C. Factory marking:
 - 1. Identify type, grade, moisture content, inspection service, producing mill, and other qualities.
 - 2. Marking may be omitted if certificate of inspection is provided for each shipment.
 - a. Mark each piece of fire retardant treated material.
 - 3. **Scientific Certification System for recycled content.**
- D. Standards for fire hazard classification for fire retardant treated material:
 - Underwriters' Laboratories, (UL) and American Wood Preservers Institute (AWPI).
 - 1. Test method: ASTM-E84.
- E. Preservative and pressure treatment standards: American Wood Preservers Association (AWPA).
 - 1. Provide continuous monitoring of production and kiln temperatures by third party inspection agency to assure that production methods are same as those used on elevated temperature strength test specimens. Indicate compliance in factory marking.

Appendix D – Sample Specifications

1.2 SUBMITTALS

- A. Project information:
 - 1. Certification of preservative or fire retardant treated material.
 - 2. Fasteners approved for use of preservative or fire retardant treated material.
 - 3. Chain of Custody documents for FSC Certified Wood products.
 - 4. Documentation of SCS Certification.
 - 5. Certification of compliance with ANSI Standards for Biobased Composite Boards.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Store in dry, weather tight, ventilated spaces.
- B. Do not bring items into building until receiving spaces have humidity controlled to between 25% and 65%
- C. Stack to provide air circulation.
- D. Store and protect materials in areas where moisture content can be maintained.
- E. Time delivery and installation to avoid delaying progress of other work.
- F. Handle treated material and repair damage in accordance with AWPA-M-4.

1.4 JOB CONDITIONS

- A. Drawings indicate type, arrangement, and location of items of finish carpentry and millwork.
- B. If variations from arrangement or profile indicated are required, notify Architect.
- C. Make such variations at no added expense to Owner.
- D. Contractor is responsible for fitting to recesses, including trim pieces, fillers and closures.

PART 2 – PRODUCTS

2.1 MATERIALS - ROUGH CARPENTRY

- A. Acceptable manufacturers:
 - 1. Preservative Treated Lumber (AQC):
 - a. Base:
 - 1) Chemical Specialties.
 - 2. Fire retardant treated lumber:
 - a. Base:
 - 1) Hoover Treated Wood Products.

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- b. Optional:
 - 1) Hickson.
 - 2) Chemical Specialties.
 - 3. **Plywood, FSC Certified:**
 - a. **Base:**
 - 1) **Willamette Industries.**
 - 4. **Particleboard (SCS):**
 - a. **Base:**
 - 1) **Georgia Pacific.**
 - b. **Optional:**
 - 1) **Sierra Pine**
 - 2) **Temple-Inland.**
 - 5. **Medium Density Fiberboard (SCS)**
 - a. **Base:**
 - 1) **Sierra Pine.**
 - b. **Optional:**
 - 1) **Willamette Industries.**
 - 2) **Temple-Inland**
 - 3) **Georgia Pacific.**
 - 6. **Medium Density Fiberboard, Fire Rated (SCS)**
 - a. **Base:**
 - 1) **Sierra Pine.**
 - 7. **Biobased Composite Board:**
 - a. **Base:**
 - 1) **Primeboard.**
 - b. **Optional:**
 - 2) **Woodstalk.**
 - 3) **CenKan.**
 - 4) **DuraCane.**
- B. Lumber for framing, blocking, nailers, furring, cant strips, grounds, and similar members:
- 1. Comply with dry size requirements of PS-20, Douglas fir WWPA No.3, or SFPA No.2.
 - 2. Thoroughly seasoned, well fabricated materials of longest practical lengths and sizes.
 - 3. Free of non-correctable warp.
 - 4. Discard material that would impair quality of work.
- C. Plywood:
- 1. PS1, exterior type, A-C Grade.
 - 2. Provide MDO-EXT-APA Plywood, as indicated.
 - 3. **FSC Certified.**
- D. Preservative treated material (AQC):
- 1. Base Product: "Preserve" by Chemical Specialties, Inc.
 - 2. Treated lumber standard: AWPA C-2.
 - 3. Treated plywood standard: AWPA C-9.
 - 4. Preservative treatment standard: AWPA ACQ-94.
 - 5. Kiln dry to 15 percent moisture content.

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- 6. Usage:
 - a. Outside building and below grade.
 - b. Within Exterior walls (except where fire rated).
 - c. Parapets (except where not fire rated).
 - d. Plywood and Blocking used in Metal Roof assemblies.
 - e. Plywood and Blocking used in “flat” roof assemblies.
 - f. Other areas where indicated.
- E. Particleboard:
 - 1. Comply with ANSI A208.1.
 - 2. Formaldehyde emissions not to exceed 0.30 ppm.
 - 3. **SCS certified for recycled content.**
- F. Medium Density Fiberboard
 - 1. Comply with ANSI A208.2.
 - 2. Formaldehyde emissions not to exceed 0.30 ppm.
 - 3. **SCS certified for recycled content.**
- G. **Biobased Composite Board:**
 - 1. **Manufacture with agricultural waste product.**
 - 2. **Comply with ANSI 208.1 MR and ANSI 208.3 MR.**
 - 3. **Zero formaldehyde emissions.**

PART 3 - EXECUTION

PART 3 IS NOT INCLUDED IN THIS SAMPLE DOCUMENT

SECTION 07900 JOINT SEALANTS

Green Use Discussion: Most indoor air pollution comes from sources inside the building in the form of volatile organic compounds (VOCs). VOCs are organic chemicals or compounds that, when exposed to the atmosphere at room temperature, easily vaporize. They are called organic because they contain the element carbon in their molecular structures. Research shows that some VOCs can cause chronic and acute health effects at high concentrations, and some are known carcinogens. Low to moderate levels of multiple VOCs may also produce acute reactions such as eye, nose, and throat irritation; headaches, loss of coordination, nausea; damage to liver, kidney, and central nervous system. VOCs typically invade the interior environment during the construction process when materials are installed. It is crucial to minimize their impact or serious consequences may occur.

Architectural sealants are a primary source of VOCs. The Bay Area Air Quality Management District (BAAQMD), a regional agency of the California Air Resources Board, publishes regulations regarding the VOC limits of numerous products and operations. [Rule 51](#) establishes VOC limits for sealants.

Appendix D – Sample Specifications

LEED NOTES! LEED credit EQ 4.1 identifies low-emitting materials relating to sealants and adhesives. To obtain the credit sealants must comply with BAAQMD standards.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Definition:
 - 1. Words "calk" and "caulking" mean sealant work.
 - 2. "Interior wet areas" means toilets, showers, kitchens and similar areas where sealant is subject to moisture.
- B. Seal joints which would otherwise permit penetration of moisture or air, unless sealant work is specifically required under other sections.
- C. Work included: Provide sealants as follows:
 - 1. Flashing reglets and retainers.
 - 2. Exterior wall joints.
 - 3. Masonry control joints, exterior and interior and between masonry and other materials.
 - 4. Flooring joints.
 - 5. Isolation joints.
 - 6. Joints between paving or sidewalks and building.
 - 7. Joints at penetrations of walls, floors and decks by piping and other services and equipment not requiring firestopping.
 - 8. Exterior and interior perimeters of exterior and interior door and window frames, louvers, grilles, etc.
 - 9. Between cabinets, casework, countertops and back splashes where adjacent to walls.
 - 10. Joints between dissimilar materials, to provide visually acceptable closures.
 - 11. Solidly bed thresholds at exterior doors.
 - 12. Other joints where caulking, sealant or compressible sealant is indicated.

1.2 QUALITY ASSURANCE

- A. Sealant materials:
 - 1. Sealant specification: ASTM-C920 Type S or M, Grade-NS, minimum Class-25.
 - 2. Sealant testing: ASTM-C510; ASTM-C711; ASTM-C719 Class-25, Grade-N; ASTM-C792; ASTM-C793; ASTM-C910.
 - 3. Sealant use: ASTM-C1193.
 - 4. Compressible sealants: ASTM-C509.

Appendix D – Sample Specifications

5. Bay Area Air Quality Management District Rule 51 – Adhesive and Sealant Products.

6. Installer approved by manufacturer.

1.3 SUBMITTALS

- A. Samples:
 - 1. Cured sample of each color for color selection.
- B. Contract Closeout Information:
 - 1. **Manufacturer's data acknowledging VOC content for each product supplied.**
 - 2. **Manufacturer's data acknowledging that foamed backer rods are manufactured without CFCs, HCFCs or other Ozone Depleting Compounds.**
 - 3. Maintenance data.
 - a. Owner inspection checklist.
 - 4. Warranty.

1.4 JOB CONDITIONS

- A. Perform sealant work only when ambient temperature is 5 degC 40 degF or higher.
- B. Do not apply sealants late afternoons, late fall or early spring, in cold climates.
- C. Apply only to joints free of material that may inhibit bond.
- D. Apply to cementitious materials only when thoroughly cured and dry.

1.5 WARRANTY

- A. Provide written warranty sealant work will remain free of defects for a period of 2 years:
 - 1. Failure of water tightness or air tightness constitutes defect.
 - 2. Remove defective work and materials and replace with new work and materials.
 - 3. Repair other work damaged as a result of defective sealant work at no additional expense to Owner.
 - 4. Warranty signed by installer and Contractor.

Appendix D – Sample Specifications

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Acceptable manufacturers:
 - 1. Polyurethane sealants:
 - a. Base:
 - 1) Tremco.
 - b. Optional:
 - 1) Pecora.
 - 2) Sonneborn/ChemRex.
 - 3) Sika.
 - 2. Silicone sealants:
 - a. Base:
 - 1) General Electric.
 - b. Optional:
 - 1) Tremco.
 - 2) Pecora.
 - 3) Dow.
 - 4) Sonnoborn.
 - 3. Compressible sealant:
 - a. Base:
 - 1) Polytite Manufacturing.
 - b. Optional:
 - 1) W.R. Grace.
 - 2) Emseal.
 - 4. Other manufacturers desiring approval comply with Document 00440.
- B. Sealants - General:
 - 1. Provide colors matching materials being sealed.
 - 2. Where sealant is not exposed to view, use manufacturer's standard color which has the best performance.
 - 3. Use non-sag sealant in vertical and horizontal joints.
 - 4. Before use of sealant, investigate its compatibility with surfaces, fillers and other materials in joint system.
 - 5. Use only compatible materials.
 - 6. Obtain sealants from manufacturers who will provide manufacturers' field service representatives at project site for purpose of advising and instructing installers.
 - 7. Provide such services, at no expense to Owner.
 - 8. Interior:
 - a. Silicone.
 - 9. Exterior:
 - a. Polyurethane or Silicone.
 - 10. Use compressible sealant as indicated.

Appendix D – Sample Specifications

11. VOC content for sealants not greater than 250 g/L.

12. VOC content for nonporous primers not greater than 250 g/L.

13. VOC content for porous primers not greater than 775 g/L.

C. Polyurethane sealants.

1. 1, 2, or 3 component.

2. Base Product: Tremco Dymeric 240, (Dymonic for concealed use only).

D. Silicone sealants.

1. 1 or 2 component.

E. Sealant, compressible:

1. Provide width of material twice joint width.
2. Foamed polyurethane strip saturated with polymerized polybutylene waterproofing agent.
3. Coated on front face with non-reactive release agent that acts as bond breaker.
 - a. Polytite B.
 - b. Greyflex/25V; Emseal.
 - c. Perm-A-Barrier: W.R. Grace.
4. Adhesive, compressible sealant: As recommended by sealant manufacturer.

F. Joint cleaner, primer, bond breaker: As recommended by sealant manufacturer.

G. Sealant backer rod:

1. Rod stock of polyethylene, polyethylene jacketed polyurethane foam, or other flexible, non-absorbent, non-bituminous material recommended by sealant manufacturer to:
 - a. Control joint depth.
 - b. Break bond of sealant at bottom of joint.
 - c. Provide proper shape of sealant.
 - d. Manufactured without the use of CFCs, HCFCs or other Ozone Depleting Compounds.**

PART 3 - EXECUTION

PART 3 IS NOT INCLUDED IN THIS SAMPLE DOCUMENT

Appendix D – Sample Specifications

Appendix E – State Sustainable Design Programs

A number of states have developed their own sustainable design initiatives, programs, and policies. A sampling of such programs is included in this Appendix. In addition, the California Integrated Waste Management Board keeps a list of state programs on their website at <http://www.ciwmb.ca.gov/GreenBuilding/GvAction.htm#State>.

Illinois

Two executive orders established "Green Illinois," an environmental program designed to encourage community environmental planning and make state government a model for environmental stewardship. Green Illinois is designed to increase awareness and promote efforts to reduce waste, use alternative fuels, improve energy efficiency, and generally use products and procedures that are environmentally sustainable and economically efficient.

Maryland

The Maryland Green Buildings Council's mission is to create a high efficiency green buildings program and make recommendations to the Governor regarding appropriate criteria, standards and a numeric rating system for use by the program. The rating system is based on the Leadership in Energy and Environmental Design (LEED) Rating System.

Minnesota

The Minnesota Sustainable Design Guide educates and assists architects, building owners, occupants, educators, students, and the general public about sustainable building design. The guide is a design tool that can be used to overlay environmental issues on the design, construction, and operation of both new and renovated facilities. It can be used to set sustainable design priorities and goals; develop appropriate sustainable design strategies; and to determine performance measures to guide the sustainable design and decision-making processes. It can also be used as a management tool to organize and structure environmental concerns during the design, construction, and operations phases.

New York

The New York City Department of Design and Construction's (DDC) Office of Sustainable Design (OSD) identifies and implements cost-effective ways to promote greater environmental responsibility in building design. OSD published DDC's High Performance Building Guidelines. This document introduced sustainable design practices to DDC project teams and has been recognized internationally as a green building reference.

Appendix E – State Sustainable Design Programs

Oregon

SustainableOregon.net communicates developments in Oregon state government and connects you with local agencies, organizations and businesses taking leadership roles in sustainable development. The Sustainability Board has issued the State Agency Guidance, a document that helps state agencies implement sustainability and achieve concrete objectives. The board has also published a series of recommended State Agency Sustainability Actions to strengthen and clarify efforts for sustainability in the State of Oregon.

Pennsylvania

The Governor's Green Government Council was created in 1998 to help the state government adopt environmentally friendly operation policies and practices. The council works cooperatively across agency jurisdictions, putting sustainable practices into state government's planning, policymaking, and regulatory operations and striving for continuous improvement in environmental performance. Agencies will focus on planning and operations, particularly energy efficiency in areas such as building design and management, procurement of environmentally friendly commodities and services, vehicle purchasing and recycling.

Wisconsin

The Wisconsin Green Building Alliance's (WGBA) mission is to facilitate and promote the development and use of ecologically sustainable materials and practices within Wisconsin's Built environment. WGBA provides a variety of resources, including an annual green building conference; educational forums and site visits to green demonstration projects; a quarterly newsletter; and an annual assessment survey to keep abreast of the needs of the industry.

Appendix F – Compilation of Resources

Contacts	Topic	Description	Contact Information
Environmental Building News (EBN)	Publication	EBN is a monthly publication with articles, reviews, and news stories on energy-efficient, resource-efficient, and healthy building practices.	Environmental Building News BuildingGreen, Inc. 122 Birge Street Suite 30 Brattleboro, VT 05301 Telephone: (802) 257-7300 Website: http://www.buildinggreen.com

Appendix F – Compilation of Resources

Contacts	Topic	Description	Contact Information
Iowa Utility Association	Utility	The Iowa Utility Association (IUA) was formed to develop, organize and promote improvement in the common business interests and conditions of Iowa's investor-owned electric and natural gas public utilities. The members serve 72 percent of the state's electric customers and almost 90 percent of its natural gas customers. Each member offers its customers an array of energy efficiency programs that include programs that provide incentive for sustainable design and energy efficient systems in new construction.	IUA 321 E. Walnut Street, Suite 300 PO Box 6007 Des Moines, IA 50309 Telephone: (515) 282-2115 Website: http://www.iowautility.org

Appendix F – Compilation of Resources

Contacts	Topic	Description	Contact Information
Iowa Association of Electric Cooperatives	Utility	The Iowa Association of Electric Cooperatives (IAEC) provides services to the state's electric cooperatives in the areas of legislation, regulation, safety, communications, education and training, and employee benefits.	IAEC 8525 Douglas, Suite 48 Des Moines, IA 50322 Telephone: (515) 276-5350 Website: http://www.iowarec.org
Iowa Sustainable Design Case Studies	Case Studies	There are many excellent examples of sustainable design in Iowa, many of which were designed and constructed prior to the development of the Iowa Sustainable Design Initiative.	Iowa Department of Natural Resources 502 E. 9th Street, Wallace State Office Building Des Moines, IA Telephone: (515) 281-4367 Website: http://www.sustainableiowa.org/IACaseStudies.html

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Contacts	Topic	Description	Contact Information
Iowa Green Buyer's Guide	Materials	The Iowa Green Buyer's Guide provide recommendations for product selection based on a number of environmental issues. These factors include, but are not limited to, Recycling, Product Stewardship, IAQ/Health Concerns, Energy Benefits, Local Initiatives and Warranties. Additionally, readers are directed to additional links where they may find more information on the subject.	Iowa Department of Natural Resources 502 E. 9th Street, Wallace State Office Building Des Moines, IA Telephone: (515) 281-4367 Website: http://www.sustainableiowa.org/GreenBuyersGuide.html
U.S. Green Building Council (USGBC)	LEED	The U.S. Green Building Council is the nation's foremost coalition of leaders from across the building industry working to promote buildings that are environmentally responsible, profitable and healthy places to live and work.	U.S. Green Building Council 1015 18th Street, NW Suite 805 Washington, DC 20036 Telephone: (202) 828-7422 Website: http://www.usgbc.org

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Contacts	Topic	Description	Contact Information
Portland Energy Conservation, Inc. (PECI)	Commissioning	PECI is a nonprofit corporation that specializes in innovative and creative approaches to the responsible use of energy and facility resources. PEGI provides numerous resources related to commissioning.	PECI 1400 SW 5th Avenue Suite 700 Portland, OR 97201 Telephone: 503-248-4636 Website: http://www.peci.org
Department of Energy Building Energy Software Tools	Energy Modeling	The Department of Energy sponsors continued development of a variety of building energy software tools. This Internet site provides information about software tools now under development	U.S. Department of Energy Chicago Regional Office One S. Wacker, Suite 2380 Chicago, IL 60606 Website: http://www.eere.energy.gov/buildings/energy_tools/doe_tools.html

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Contacts	Topic	Description	Contact Information
Sustainable Project Rating Tool (SPiRiT)	Rating System	The Sustainable Project Rating Tool (SPiRiT) was derived from the U.S. Green Building Council's LEED™ 2.0 Green Building Rating System and is primarily used by the Army Corps of Engineers.	U.S. Army Corps of Engineers Telephone: (217) 352-6511, Ext. 7542 Website: http://www.cecer.army.mil/SustDesign/SPiRiT.cfm
Energy Star Building Label	Energy	The Energy Star Building Label is awarded to buildings that exhibit high energy efficiency without sacrificing occupant safety and comfort. These buildings are given national recognition for their energy performance.	Environmental Protection Agency Ariel Rios Building 1200 Pennsylvania Avenue N.W. Washington, DC 20460 Telephone: (202) 272-0167 Website: http://www.energystar.gov/

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Contacts	Topic	Description	Contact Information
Building Research Establishment Environmental Assessment Method (BREEAM)	Rating System	The Building Research Establishment (BRE) originally developed BREEAM in 1998 in the United Kingdom BREEAM is now regarded as an industry benchmark for assessing a building's environmental quality and performance.	BREEAM Office BRE, Bucknalls Lane Garston, Watford WD25 9XX Telephone: 01923 664462 Website: http://www.products.bre.co.uk/breeam/
Green Building Challenge	Rating System	Green Building Challenge is an international collaborative effort to develop a building environmental assessment tool that exposes and addresses controversial aspects of building performance and from which the participating countries can selectively draw ideas to either incorporate into or modify their own tools.	Website: http://www.greenbuilding.ca/

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Contacts	Topic	Description	Contact Information
Federal Energy Management Program LCCA Resources	Life Cycle	Guidance on meeting LCCA Requirements of Federal Executive Order 13123.	<p>Federal Energy Management Program</p> <p>EE-2L 1000 Independence Ave., SW Washington, DC 20585-0121 Telephone: (202) 586-5772</p> <p>Website: http://www.eere.energy.gov/femp/resources/lifecycleguide.html</p>

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Contacts	Topic	Description	Contact Information
EPA Indoor Air Quality Glossary of Terms	Indoor Air Quality	Terms related to indoor air quality provided by the EPA Indoor Air Quality Division.	Environmental Protection Agency Ariel Rios Building 1200 Pennsylvania Avenue N.W. Washington, DC 20460 Telephone: (202) 272-0167 Website: http://www.epa.gov/iaq/glossary.html
Database of State Incentives for Renewable Energy (DSIRE)	Renewable Energy	The Database of State Incentives for Renewable Energy (DSIRE) is a comprehensive source of information on state, local, utility, and selected federal incentives that promote renewable energy.	Interstate Renewable Energy Council POB 1156 Latham, New York 12110-1156 Telephone: (518) 458-6059 Website: http://www.dsireusa.org/

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Contacts	Topic	Description	Contact Information
Funding Green Buildings Customer Newsletter	Funding	This quarterly publication to clients of Jan McAdams, grant writer for sustainable building grants.	The McAdams Group 1350 East Flamingo Road, Suite 362 Las Vegas, Nevada 89119 Telephone: (702) 407-7888 Website: http://www.fundinggreenbuildings.com/
Iowa DNR Energy Incentives and Assistance	Energy	Several state and federal programs can help Iowans adopt energy efficiency and renewable energy technologies. Assistance can be in the form of grant programs, loan programs, tax incentives, expert assistance and more	Iowa Dept. of Natural Resources Wallace Building 502 E. 9th Street, Des Moines, IA 50319-0034 Telephone: (515) 281-4367 Website: http://www.state.ia.us/dnr/energy/MAIN/Incentives&Assistance.html

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Contacts	Topic	Description	Contact Information
US Federal Energy Management Program Building Life-Cycle Cost Programs	Energy	FEMP offers many free programs to help building owners determine the financial implications to design decisions before they are chosen.	<p>Federal Energy Management Program</p> <p>EE-2L 1000 Independence Ave., SW Washington, DC 20585-0121 Telephone: (202) 586-5772</p> <p>Website: http://www.eere.energy.gov/femp/techassist/life_cycle_cost.html</p>

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Contacts	Topic	Description	Contact Information
Sustainable Building Technical Manual	Publication	This manual helps designers, builders, owners, and operators of public and private facilities implement green strategies. This manual offers step-by-step guidelines for energy- and resource-efficient building during pre-design, design, construction, operations, and management. It also includes chapters on sustainable building economics and future issues and trends.	U.S. Green Building Council 1015 18th Street, NW, Suite 805 Washington, DC 20036 Telephone: (202) 828-7422 Website: http://www.usgbc.org/Resources/SBTM.asp

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Contacts	Topic	Description	Contact Information
Green Building Advisor (GBA)	Sustainable Solutions	GBA is a software program designed to help architects and other building professionals design occupant-friendly and environmentally friendly buildings. The software presents hundreds of sustainable solutions and related resources. The program allows the user to search information, or enter project data to look for project-specific solutions.	Green Building Advisor Development Team: gba@greenbuildingadvisor.com Website: http://www.greenbuildingadvisor.com/

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Contacts	Topic	Description	Contact Information
Whole Building Design Guide	Sustainable Solutions	The Whole Building Design Guide is a web site developed and supported by federal agencies. The site contains a wealth of information on sustainable design including in-depth information on specific sustainable solutions. It contains numerous resources related to other federal goals such as security, accessibility, and affordability.	<p>Whole Building Design Guide</p> <p>National Institute of Building Sciences (NIBS) 1090 Vermont Avenue NW, Suite 700 Washington, DC 20005 Telephone: (202) 289-7800</p> <p>Website: http://www.wbdg.org/</p> <p>(Select Design Guidance, then Design Objectives to reach the sustainable design information.)</p>

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Contacts	Topic	Description	Contact Information
State of California	RFP	Multiple sample construction documents including sample advertisements, RFP and RFQ language, and RFP scoring sheets.	<p>California Integrated Waste Management Board</p> <p>1001 I Street PO Box 4025 Sacramento, CA 95812-4025 Telephone: (916) 341-6000</p> <p>Website: http://www.ciwmb.ca.gov/GreenBuilding/Toolkit.htm</p>

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Contacts	Topic	Description	Contact Information
State of New Jersey	RFQ	Sample Request for Qualifications High Performance/Green Architects, Engineers, Consultants.	<p>New Jersey Green Homes Office</p> <p>New Jersey Department of Community Affairs Division of Housing 101 South Broad Street PO Box 806 Trenton, NJ 08625-0800 Telephone: (609) 292-3931</p> <p>Website: http://www.nj.gov/dca/dhcr/hsg_prog/njgreenhomes.shtml</p>

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Contacts	Topic	Description	Contact Information
New Ecology Institute, Green RFP's: A How To Guide	RFP	Tips on writing a green RFP.	New Ecology, Inc. 130 Bishop Allen Drive, 5th Floor Cambridge, MA 02139 Telephone: (617) 354-4099 Website: http://www.newecology.org/docs/newsletter/Green RFP II.PDF
Minnesota Sustainable Design Guide	RFP	Introduction to the RFP Process – Describes issues to be considered before drafting a RFP with sustainable criteria.	Minnesota Sustainable Design Guide CALA Building Research 1425 University Avenue SE, Suite 230 Minneapolis, MN 55455 Website: http://www.msdg.umn.edu/2.0RFP-Labs/MSDG/intro.html

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Contacts	Topic	Description	Contact Information
Bay Area Air Quality Management District	Indoor Air Quality	The Bay Area Air Quality Management District sets the nationally accepted standards for air quality.	<p>Bay Area Air Quality Management District Offices</p> <p>939 Ellis Street San Francisco, CA 94109 Telephone: (415) 771-6000</p> <p>Website: http://www.baaqmd.gov/</p>
BuildingGreen.com	Sustainable Solutions	Building Green publishes the Environmental Building News, a publication of technical articles, product reviews, and information about events.	<p>Environmental Building News</p> <p>BuildingGreen, Inc. 122 Birge Street Suite 30 Brattleboro, VT 05301 Telephone: (802) 257-7300</p> <p>Website: http://www.buildinggreen.org/</p>

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Contacts	Topic	Description	Contact Information
Certified Forest Products Council	Materials	This site has research information about sustainable forestry practices, and links to certified wood products and lumber.	<p>Certified Wood & Paper Association</p> <p>721 NW 9th Avenue, Suite 300 Portland, OR 97209 Telephone: (503) 224-7696</p> <p>Website: http://www.certifiedwood.org/</p>
The Construction Specifications Institute (CSI)	Specifications	CSI publishes the CSI Manual of Practice, a primary reference for specification writers.	<p>The Construction Specifications Institute</p> <p>99 Canal Center Plaza, Suite 300 Alexandria VA 22314 Telephone: (800) 689-2900</p> <p>Website: http://www.csinet.org/</p>

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Contacts	Topic	Description	Contact Information
Environmental Protection Agency: EPA Protocol for Environmental Requirements, Baseline IAQ and Materials, for Research Triangle Park Campus, Section 01445	Indoor air quality	A good specification template when indoor air quality testing is a project requirement.	Environmental Protection Agency Ariel Rios Building 1200 Pennsylvania Avenue N.W. Washington, DC 20460 Telephone: (202) 272-0167 Website: http://www.epa.gov/rt-p/new-bldg/environmental/s_01445.htm
Document No. 832R92005 - Storm Water Management For Construction Activities. Developing Pollution Prevention Plans And Best Management Practices. Washington, DC: EPA; 1992	Storm Water	A guide for developing a good storm water management plan. Available from the U.S. Department of Commerce, National Technical Information Service.	U.S. Department of Commerce Technology Administration National Technical Information Service Springfield, VA 22161 Telephone: (703) 605-6000 Website: http://www.ntis.gov/

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Contacts	Topic	Description	Contact Information
Forest Stewardship Council	Materials	FSC publishes FSC 1.2-00: Principles and Criteria; search under the documents list; available in a .pdf format.	Forest Stewardship Council-U.S. 1155 30th Street NW Suite 300 Washington, DC 20007 Telephone: (202) 342-0413 Website: http://www.fscoax.org/principal.htm
Green Seal	Materials	The Green Seal program sets sustainable standards for products and materials.	Green Seal 1001 Connecticut Avenue, NW Suite 827 Washington, DC 20036-4324 Telephone: (202) 872-6400 Website: http://www.greenseal.org/

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Contacts	Topic	Description	Contact Information
Public Technology, Inc. and US Green Building Council	Publication	Sustainable Building Technical Manual - Green Building Design, Construction, and Operation; a good all around technical resource available free to members of U.S. Green Building Council in .pdf format and can be purchased by non-members.	U.S. Green Building Council 1015 18th Street, NW, Suite 805 Washington, DC 20036 Telephone: (202) 828-7422 Website: http://www.usgbc.org/
Scientific Certification Systems	Materials	Provides independent third party environmental certification testing.	Food and Agriculture – U.S. Telephone: (510) 452-8012 Website: http://www.scs-certified.com/

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Contacts	Topic	Description	Contact Information
Silva Forest Foundation	Materials	This foundation works with communities to promote sustainable foresting practices; a good source of training and publications.	Silva Forest Foundation PO Box 9 Slocan Park British Columbia, Canada V0G 2E0 Telephone: (250) 226-7222 Website: http://www.silvafor.org/
SmartWood	Materials	Provides sustainable wood certification and information on sources for certified wood and wood products.	SmartWood Goodwin-Baker Building 65 Millet St. Suite 201 Richmond, VT 05477 Telephone: (802) 434-5491 Website: http://www.smartwood.org/

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Contacts	Topic	Description	Contact Information
South Coast Air Quality Management District	Indoor air quality	Sets the current national standard for minimizing VOCs in materials.	South Coast Air Quality Management District 21865 Copley Dr. Diamond Bar, CA 91765 Telephone: (800) 288-7664 Website: http://www.aqmd.gov/

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